

CLAIMS

1. A network configuration, comprising:

a first network medium, wherein the first network medium is a 1394 network;

a plurality of host computers coupled to the first network medium;

a second network medium;

5 a plurality of host computers coupled to the second network medium;

a link layer gateway computer coupled to the first network medium and coupled to the second network medium;

wherein the link layer gateway computer is operable to communicate a data packet from a source host computer selected from one of the plurality of host computers coupled to the first network medium to a destination host computer selected from one of the plurality of host computers coupled to the second network medium; and

wherein the link layer gateway computer is operable to communicate a data packet from a source host computer selected from one of the plurality of host computers coupled to the second network medium to a destination host computer selected from one of the plurality of host computers coupled to the first network medium.

2. The network configuration of Claim 1 wherein the second network medium is a local area network.

3. The network configuration of Claim 1 wherein the second network medium is a wide area network.

4. The network configuration of Claim 1 wherein the second network medium comprises an Ethernet network.

5. The network configuration of Claim 1 wherein the link layer gateway computer comprises:

- a first network interface circuit coupled to the first network medium; and
- a second network interface circuit coupled to the second network medium.

6. The network configuration of Claim 5:

wherein the link layer gateway computer is programmed to execute an IP protocol handler coupled to communicate with each of the first and second network interface circuits;

5 wherein the link layer gateway computer has an assigned IP address;

wherein, responsive to either of the first and second network interface circuits receiving a data packet, the IP protocol handler evaluates a destination IP address in the received data packet; and

10 wherein the IP protocol handler is responsive to the received data packet if the destination IP address corresponds to the assigned address of the link layer gateway computer.

7. The network configuration of Claim 6 wherein the IP protocol handler comprises a Windows 95 IP protocol handler.

8. The network configuration of Claim 6 wherein the link layer gateway computer is programmed to execute an application program coupled to communicate with the IP protocol handler.

9. The network configuration of Claim 6:

wherein the link layer gateway computer is programmed to execute a link layer protocol handler coupled to communicate with each of the first and second network interface circuits;

5 wherein, responsive to either of the first and second network interface circuits receiving a data packet comprising an IP communication, the link layer protocol handler evaluates a destination IP address in the received data packet; and

10 wherein, responsive to determining that the destination IP address does not correspond to the assigned address of the link layer gateway computer, the link layer protocol handler determines if a source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium.

10. The network configuration of Claim 9 wherein the IP protocol handler is independent of the link layer protocol handler.

11. The network configuration of Claim 9 wherein, responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer.

12. The network configuration of Claim 11:

wherein the received data packet further comprises a hardware physical address;

wherein the destination host computer comprises a network interface circuit coupled to one of either the first network medium or the second network medium;

5 wherein the network interface circuit of the destination host computer is responsive to a destination hardware physical address; and

wherein, prior to communicating the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer, the link layer protocol handler changes the hardware physical
10 address to match the destination hardware physical address.

13. The network configuration of Claim 6:

wherein the link layer gateway computer is programmed to execute a link layer protocol handler coupled to communicate with each of the first and second network interface circuits;

5 wherein, responsive to either of the first and second network interface circuits receiving a data packet comprising an address pairing communication, the link layer protocol handler evaluates a destination IP address in the received data packet; and

wherein, responsive to determining that the destination IP address does not correspond to the assigned address of the link layer gateway computer, the link layer
10 protocol handler determines if a source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium.

14. The network configuration of Claim 13:

wherein, responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates a reply data packet to the source host computer which transmitted the received data packet;

wherein the reply data packet comprises an address pairing; and

wherein the address pairing comprises the destination IP address and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the source host computer which transmitted the received data packet.

15. The network configuration of Claim 13:

wherein, responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates an address pairing data packet to the destination host computer designated by the destination IP address; and

wherein the address pairing data packet comprises a source IP address corresponding to the source host computer which transmitted the received data packet and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the destination host computer.

16. The network configuration of Claim 13:

wherein, responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates a reply data packet to the source host computer which transmitted the received data packet;

wherein the reply data packet comprises an address pairing; and

wherein the address pairing comprises the destination IP address and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the source host computer which transmitted the received data packet

wherein, responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium, the link layer protocol communicates an address pairing data packet to the destination host computer designated by the destination IP address; and

wherein the address pairing data packet comprises a source IP address corresponding to the source host computer which transmitted the received data packet and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the destination host computer.

17. A computer-readable memory configured so that, when read and used by a link layer gateway computer, the link layer gateway computer is directed to a plurality of operations comprising:

receiving a data packet from either a first network medium or a second network
5 medium;

wherein the data packet is issued by a source host computer which is one of a plurality of host computers coupled to the first network medium or one of a plurality of host computers coupled to the second network medium;

wherein the link layer gateway computer is further coupled to the first and
10 second network medium;

wherein the first network medium is a 1394 network;

communicating the data packet to a destination host computer which is one of the plurality of host computers coupled to the first network medium if the source host computer is coupled to the second network medium; and

15 communicating the data packet to a destination host computer which is one of the plurality of host computers coupled to the second network medium if the source host computer is coupled to the first network medium.

18. The computer-readable memory of Claim 17 wherein the second network medium is a local area network.

19. The computer-readable memory of Claim 17 wherein the second network medium is a wide area network.

20. The computer-readable memory of Claim 17 wherein the second network medium comprises an Ethernet network.

21. The computer-readable memory of Claim 17 wherein the plurality of operations further comprise:

executing an IP protocol handler coupled to communicate with each of a first and second network interface circuit, wherein the link layer gateway computer is coupled to the first network medium via the first network interface circuit and wherein the link layer gateway computer is coupled to the second network medium via the second network interface circuit;

wherein the operation of executing an IP protocol handler comprises, responsive to either of the first and second network interface circuits receiving a data packet:

evaluating a destination IP address in the received data packet; and
responding to the data packet if the destination IP address corresponds to the assigned address of the link layer gateway computer.

22. The computer-readable memory of Claim 21 wherein the operation of executing an IP protocol handler comprises executing a Windows 95 IP protocol handler.

23. The computer-readable memory of Claim 17 wherein the plurality of operations further comprises:

executing a link layer protocol handler coupled to communicate with each of a first and second network interface circuit, wherein the link layer gateway computer is coupled
5 to the first network medium via the first network interface circuit and wherein the link layer gateway computer is coupled to the second network medium via the second network interface circuit;

wherein the operation of executing a link layer protocol handler comprises:

responsive to either of the first and second network interface circuits
10 receiving a data packet comprising an IP communication, evaluating a destination IP address in the received data packet;

determining whether the destination IP address corresponds to the assigned address of the link layer gateway computer; and

responsive to determining that the destination IP address does not
15 correspond to the assigned address of the link layer gateway computer, determining if a source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium.

24. The computer-readable memory of Claim 23 wherein the operation of the IP protocol is independent of the operation of the link layer protocol.

25. The computer-readable memory of Claim 23 wherein the operation of executing a link layer protocol handler further comprises, responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer designated by the destination IP
5 address are not on the same one of either the first network medium or the second network medium, communicating the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer.

26. The computer-readable memory of Claim 25 wherein the operation of executing a link layer protocol handler further comprises, prior to communicating the received data packet from the network medium connected to the source host computer to the network medium connected to the destination host computer, changing a hardware
5 physical address of the data packet from a first hardware physical address corresponding to the link layer gateway computer to a second hardware physical address matching a destination hardware physical address corresponding to a network interface circuit coupling the destination host computer to one of either the first network medium or the second network medium.

27. The computer-readable memory of Claim 17 wherein the plurality of operations further comprises:

executing a link layer protocol handler coupled to communicate with each of a first and second network interface circuit, wherein the link layer gateway computer is coupled
5 to the first network medium via the first network interface circuit and wherein the link layer gateway computer is coupled to the second network medium via the second network interface circuit;

wherein the operation of executing a link layer protocol handler comprises:

responsive to either of the first and second network interface circuits
10 receiving a data packet comprising an address pairing communication, evaluating a destination IP address in the received data packet;

determining whether the destination IP address corresponds to the assigned address of the link layer gateway computer; and

responsive to determining that the destination IP address does not
15 correspond to the assigned address of the link layer gateway computer, determining if a source host computer which transmitted the received data packet and the destination host computer designated by the destination IP address are not on the same one of either the first network medium or the second network medium..

28. The computer-readable memory of Claim 27 wherein the operation of executing the link layer protocol further comprises:

responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer
5 designated by the destination IP address are not on the same one of either the first network medium or the second network medium, communicating a reply data packet to the source host computer which transmitted the received data packet;

wherein the reply data packet comprises an address pairing; and

10 wherein the address pairing comprises the destination IP address and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the source host computer which transmitted the received data packet.

29. The computer-readable memory of Claim 27 wherein the operation of executing the link layer protocol further comprises:

responsive to the link layer protocol handler determining that the source host computer which transmitted the received data packet and the destination host computer
5 designated by the destination IP address are not on the same one of either the first network medium or the second network medium, communicating an address pairing data packet to the destination host computer designated by the destination IP address; and

10 wherein the address pairing data packet comprises a source IP address corresponding to the source host computer which transmitted the received data packet and a hardware physical address corresponding to a selected one of the first network interface circuit or the second network interface circuit, wherein the selected network interface circuit is coupled to the same network medium as the destination host computer.
